Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

GENERAL NOTES.

Our readers will remember that in 1899 Professor W. H. Pickering announced the discovery, from plates taken in Peru in August, 1898, of a ninth satellite of *Saturn.* Months, even years, elapsed without any verification, either visual or photographic, of this discovery. Professor Pickering has obtained many photographs of this tiny member of the solar system. and recently the interesting announcement was made that Professor Barnard had seen and measured this object with the great telescope of the Yerkes Observatory.* The satellite has been called *Phœbe,* and Professor Barnard estimates its visual magnitude to be 16.7.

Harvard College Observatory Annals (Vol. LIII, part 3), recently issued, gives in detail Professor Pickering's work upon this object. The most interesting announcement concerning this new member of the solar system is, that its motion about *Saturn* is retrograde, while that of all the other satellites of *Saturn* is direct. The period of revolution about *Saturn* is 546.5 days, and the eccentricity of the orbit, 0.22, is greater than that of any other satellite or large planet, and is exceeded by only a few of the asteroids. As seen from *Saturn* the magnitude of *Phœbe,* when full, would vary between 5.2 and 6.2. Its diameter is estimated to be between one hundred and two hundred miles.

Dr. Frank McClean, of Tunbridge Wells and London, and a member of the Astronomical Society of the Pacific, died on the 8th of November last, in his sixty-seventh year. He was trained as a civil engineer, but relinquished professional work in 1870. A few years after his retirement he established an astronomical observatory at Tunbridge Wells, and from that time forward was much engaged on solar and stellar spectroscopic work. In 1890 he founded the Isaac Newton Studentships at Cambridge, where he had graduated as a Wrangler in 1859. In 1894 he presented to the Royal Observatory at the

---

*See also the note on page 267 for observations by Professor Perrine with the Crossley reflector.

Cape of Good Hope the Victoria photographic telescope, of 24-inch aperture. He afterwards discovered the presence of oxygen in the helium class of stars, and in 1899 was awarded the gold medal of the Royal Astronomical Society for his photographic survey of star spectra in both hemispheres and for other contributions to the advancement of astronomy. He was a Fellow of the Royal Society and also of the Royal Astronomical Society.—*London Standard.*

In *Harvard College Observatory Circular* (No. 88) Professor E. C. PICKERING announces the discovery, photographically, of a new variable of the *Algol* type. The star is in the constellation of *Sagittarius,* and is designated —15°, 4905. Three hundred plates were available for the study of this star, and on twenty-eight of them it was found to be fainter than the normal brightness, 9.55.

"The observations indicate that the times of minimum may be represented by the formula J. D. 2,410,002.677 + 3.45348 E. An interesting feature in the variation is found in the fact that a secondary minimum occurs midway between the primary minima represented by the formula."

The first ordinary meeting of the Edinburgh Royal Society for the present session was held on the evening of November 7th in the Royal Institution, Mound—Lord M'LAREN, Vice-President, in the chair. Dr. J. HALM, Assistant Astronomer, Royal Observatory, Edinburgh, read a paper on Professor SEELIGER'S "Theory of Temporary Stars." The lecturer attempted an explanation of the peculiar features of the *Nova* spectrum on the basis of SEELIGER'S well-known hypothesis, according to which the outburst of a new star was due to the collision between a dark cosmic body and a cloud of tenuous nebular or meteoric matter. He showed that the peculiar displacements noticed in the spectral lines were due to motions of gaseous matter engendered by the impacts. Their ideas of these motions had hitherto been inadequate, because the influence of gravitation had been neglected. So far only the relative motion of the star against the nebula had been considered, the consequence being that assumptions became necessary which rendered the theory unacceptable. But the gravitational attraction of the star on the cloud particles produced motions of such a character and magnitude that most of the hitherto enigmatic spectra features were brought within the range of physical explanation. From this point of view, two important conclusions might be reached. First, they were practically unlimited in their assumptions as to the amount of heat developed by the impact. It could be shown that a bombardment of the star by matter whose density was only the one two-thousand-millionth part of that of air at ordinary pressure and temperature was sufficient to produce an amount of heat equal to that radiated by the Sun into space. This stupendous heating of the star's surface was necessarily followed by the formation of an atmosphere of incandescent gases and vapors which expanded at an enormous rate. The velocity of these expanding gases might indeed be supposed to exceed even those noticed in solar eruptions. The author showed that the most important features of the typical *Nova* spectrum could be sufficiently accounted for by considering the motions of this expanding atmosphere. Especially noteworthy was the explanation from this point of view of the uniformity of type in the spectra of all the *Novæ* hitherto observed. The second conclusion was drawn from the consideration that the impact of the meteoric cloud must always be more or less unsymmetrical or one-sided. This was shown by the author to lead to the formation of a gyrating ring of incandescent nebular matter revolving round the star nucleus, with a speed probably not much less than four hundred kilometers per second. While the expanding atmosphere determined the appearance of the spectrum during the earlier stages, the orbital motion of matter in the ring became prominently apparent in the last period of the star's development. The two conclusions, which seemed to be unavoidable, if once the soundness of SEELIGER'S fundamental assumption was admitted, were sufficient to explain the facts so far observed and to form a mental picture of the physical development of these celestial catastrophes in accordance with what had actually been noticed. The author laid particular stress on the fact that the observations pointed conclusively to DOPPLER'S principle as the basis from which the features of the *Nova* spectrum must be explained, and he dwelt upon the difficulties which were experienced if the problem was approached from other points of view. He also suggested that his second conclusion —viz., the formation of a permanent rotating ring round the star in consequence of one-sided collision—might perhaps account for the origin of the rotation of our own solar system. He pointed out the serious objections to LAPLACE'S conception of the original solar nebula, in which this rotation had to be supposed as a pre-existing quality of the solar matter, and thought that this new point of view, which assumed as the starting-point of solar evolution the encounter between the Sun and a cosmic cloud of considerable density, besides affording an explanation of the origin of rotation, would be less open to the mathematical criticism to which LAPLACE'S theory had in recent times been so severely submitted. All conclusions seemed to point in the one direction, that the solar nebula, during its primordial stage, must have been heterogeneous to a degree in no way compatible with the Laplacian conceptions, but quite imaginable if a collision of the kind here indicated was accepted. Communications were also read by Dr. MUIR on the "Sum of the Signed Primary Minors of a Determinant," on "Continuants Resolvable into Linear Factors," and on the "Three Line Determinants of a Six-by-Three Array."—*Extract from the Scotsman.*